REPLACING PAGE ADDENDUM
Filing Instructions:
1. REMOVE FROM THE SECTION THE PAGES NUMBERED THE SAME AS THOSE ATTACHED TO THIS PINK SHEET.
2. INSERT THE ATTACHED PAGES INTO THE SECTION IN THEIR PLACE.
3. PLACE THIS PINK SHEET AHEAD OF PAGE 1 OF THE SECTION.

GENERAL SAFETY PRECAUTIONS
RADIO, TELEVISION, AND CARRIER EQUIPMENT

1. GENERAL

1.001 This addendum supplements Section 010-110-001, Issue 5. The attached pages must be inserted in the section in accordance with the filing instructions above.

1.002 This addendum is issued to revise method of preparing insulated grounding stick.

3. RADIO TRANSMITTER INSTALLATIONS IN BUILDINGS

(a) 3.10(e) — revised

(b) Fig. 3 — revised

Attached:

Page 3 dated July 1965, revised
Page 4 dated July 1965, revised

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GENERAL SAFETY PRECAUTIONS

RADIO, TELEVISION, AND CARRIER EQUIPMENT

1. GENERAL

1.01 This section consists of safety methods to be used when working on radio, television, and carrier equipment.

1.02 This section is reissued to revise Form E-4748, to revise the title, and to generally bring the section up to date. Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 REMEMBER, this practice—or any practice—cannot give all the hazards encountered in working on radio, television, and carrier equipment. However, this practice gives many kinds of hazards to look for. Follow the practice where applicable. Watch for the unexpected. Remember, the safety of others working with you and also bystanders may depend on how safely you work.

1.04 A man's training, experience, job knowledge, physical condition, and attitude greatly affect how safely he works. Physical working conditions, weather, and unfamiliar equipment can also affect safety. Thus, keep these things in mind when you plan your work.

1.05 Most radio, television, and carrier equipment uses voltages dangerous to life; therefore, inexperienced personnel should not be allowed to work on it. Inexperienced persons should be trained on this equipment under the direct supervision of a competent person who is familiar with possible hazards.

1.06 It is recommended that those who work on radio, television, and carrier equipment review this practice approximately every six months.

2. PRECAUTIONS APPLYING GENERALLY TO ALL WORK

2.01 The Bell System Practices covering radio, television, and carrier equipment contain safety hazard warnings. Warnings are also included in Manufacturer's Instructions covering the equipment. Look for and follow warnings before working on the equipment. If the warnings in the Manufacturer's Instruction conflict with those in the Bell System Practice, follow the Bell System Practice.

2.02 Everyone who works on radio, television, and carrier equipment should be trained in artificial respiration. They should also be familiar with rescue methods covered in Sections 010-100-012 and 010-100-013.

2.03 Do not depend solely on safety interlock switches as protection against high voltage. Following are additional safety precautions to be observed:

(a) Turn off primary power at the main switch.

(b) If access can be obtained safely, test primary power leads to be sure they are dead, using a voltmeter or test lamp.

(c) Ground high voltage supplies. Short out all high voltage capacitors as instructed in 3.07 and 3.08.

3. RADIO TRANSMITTER INSTALLATIONS IN BUILDINGS

3.01 Keep unattended transmitter rooms locked. Place a "DANGER—HIGH VOLTAGE" sign on the entrance.

3.02 Cover floors around transmitter cabinets with an insulating material such as linoleum or rubber matting. Remember, this ***will not guarantee*** you are insulated from the

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floor should you touch high voltages. If the floor covering is damp, it can be a good conductor to ground. Therefore, be ***careful.***

3.03 Place a warning sign on all cabinet doors that give access to high voltage. (See 14.01.)

3.04 Do not disable safety interlock switches unless it becomes absolutely necessary since this is extremely dangerous. (These occasions should be very rare.) If a switch is disabled, be sure to disable the interlock so the cover cannot be replaced or the door closed without first removing the blocking or shorting device. This method will prevent forgetting to restore the interlock. ***Never use wire strapping to short out the interlock circuit.***

3.05 When opening a main power switch, tie tag E-4747 on it. (See Fig. 1.) The tag reads "DO NOT CLOSE THIS SWITCH—MAN WORKING ON TRANSMITTER." Write your name on the tag. Only the man who places the tag should remove it.

3.06 Do not work on transmitting equipment while the power is on. Never take voltage readings by touching test probes to high voltage circuits. If a voltage reading must be taken, proceed as follows:

(a) Turn off and de-energize equipment as instructed in 3.07 and 3.08.

(b) Using rubber gloves connect voltmeter; then place the meter where you can see it. Do not hold it. Stand clear.

(c) Turn on equipment and read voltage.

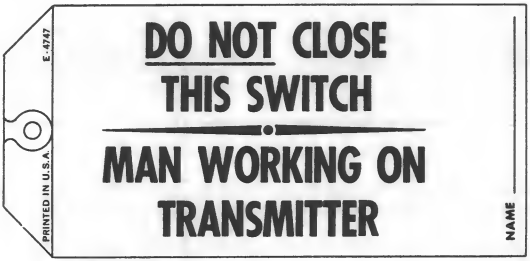
(d) Turn off and de-energize equipment as instructed in (a).

(e) Disconnect meter.

3.07 High voltage filter capacitors normally discharge through bleeder networks. However, these networks may open at any time and leave the capacitors fully charged. This can happen without giving an outward indication of trouble; therefore, short the terminals of all filter capacitors with the grounded insulated test probe described in 3.10(e).

3.08 When starting work on the wiring side of equipment, momentarily ground all terminals and wiring around the area where work is to be performed. This will bleed off any voltage or static charge that may be present.

3.09 REMEMBER, the precautions in 3.07 and 3.08 are for your protection. Follow them before touching any terminal or component with your bare hands or uninsulated tool.



RED BACKGROUND
BLACK LETTERING

Fig. 1

3.10 The following equipment and tools should be located near the transmitter.

(a) ***Power Switch:*** Install a main power switch (Square D or equivalent) or an outlet and polarized plug close to the transmitter. Use Form E-4748 to mark the switch or outlet so that in an emergency anyone could identify it and cut off all power. (See Fig. 2.)

(b) ***Insulating Gloves AT6697:*** Provide a pair of standard insulating rubber gloves. Mark the glove container and place it in a convenient location.

(c) ***Asbestos Gloves:*** Provide a pair of asbestos gloves for removing hot tubes. Mark the glove container and place it in a convenient location.

(d) ***Tube Pullers:*** Provide tube pullers for the types of small tubes being used.

(e) ***Insulated Grounding Stick:*** Make the insulated grounding stick, following instructions in Fig. 3. Store the probe so it will be near the equipment where it will be used.

(f) ***Insulated Tuning Tools:*** Insulated tuning tools are needed for the types of transmitters in your area. Clips on the inside of the transmitter cabinet front door provide a good method of storing test tools.

(g) ***Fuse Extractor:*** Provide fibre fuse extractors for removing and replacing fuses. Clips on the inside of the transmitter cabinet rear door provide a good method of storing these tools.

(h) ***High Voltage Test Leads:*** A special pair of leads is needed for testing high voltage circuits. Be sure to make them from high voltage cable. Place a spade or pin tip on one end for connecting to the test meter. On the other end of the lead, place a small, rubber protected battery or alligator clip. Store the leads in a marked container near the transmitter.

E-4748 (5-64)

AC POWER SWITCH

OPEN TO CUT OFF

AC POWER TO _____

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WHITE BACKGROUND
RED PRINTING
ADHESIVE BACK

Fig. 2

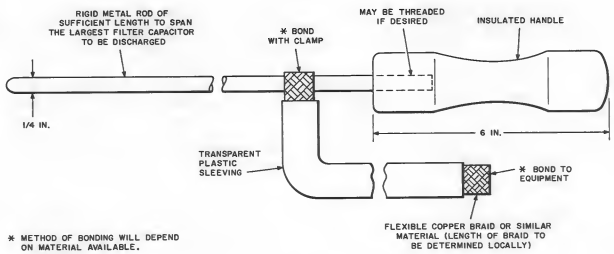

RIGID METAL ROD OF SUFFICIENT LENGTH TO SPAN THE LARGEST FILTER CAPACITOR TO BE DISCHARGED
* BOND WITH CLAMP
MAY BE THREADED IF DESIRED
INSULATED HANDLE
1/4 IN.
6 IN.
TRANSPARENT PLASTIC SLEEVING
* BOND TO EQUIPMENT
FLEXIBLE COPPER BRAID OR SIMILAR MATERIAL (LENGTH OF BRAID TO BE DETERMINED LOCALLY)
* METHOD OF BONDING WILL DEPEND ON MATERIAL AVAILABLE.

Fig. 3

4. RADIO TRANSMITTER AND RECEIVER INSTALLATIONS—POLE-MOUNTED

4.01 In addition to the safety precautions already described, observe the following special ones for pole-mounted installations.

4.02 Keep the equipment and power distribution cabinet locked. This will prevent unauthorized persons from tampering with the equipment or contacting high voltage.

4.03 Place "DANGER — HIGH VOLTAGE" sign on the inside and outside of the cabinet doors.

4.04 It is recommended that a wooden platform be used for ease in reaching the equipment → when working on it. Place a folded insulating → blanket (blanket insulating B AT7707) on the platform. This will help protect against shock. Be sure to wear rubber gloves when conditions warrant their use.

4.05 When climbing poles, follow the safety practices covering body belts, safety straps, and climbers.

5. MICROWAVE INSTALLATIONS

5.01 The safety practices for high voltage on other electronic equipment also apply to microwave equipment.

5.02 Microwave radiation produces heat in body tissues; therefore, it is dangerous to life. → (Refer to Section 010-150-001.)

5.03 Most Bell System microwave transmitters use power so low that the energy radiated from the antennas (delay lenses, horn reflectors, parabolic dishes, or passive reflectors) is not concentrated enough to do any harm. The energy coming from the open end of a waveguide spreads out and decreases rapidly in intensity. At a short distance from the waveguide, the power density is already well below the danger level. Very close to the open end, however, the energy may be sufficiently concentrated to cause injury to body tissues. Therefore, avoid exposing any part of your body at close range to open waveguides which are connected to operating microwave transmitters. It is particularly important to avoid direct radiation into your eyes. Do not look into the end of a radiating waveguide or work in a position where direct radiation can reach your eyes.

5.04 Do not operate a microwave transmitter unless it is connected either to its antenna or to an appropriate resistive load. Do not operate a transmitter (including test oscillators) into an open-ended waveguide.

5.05 Telephone Company personnel are sometimes assigned to work at military or other installations where one or more high power radars

may be operating. Areas are posted with special warning signs where hazardous fields may exist. (See Fig. 4.) Bell System personnel should not enter areas so posted unless advised by the person responsible for operation of the microwave equipment that it has been de-energized. Except for superpower installations, very few radars are hazardous beyond 200 feet. If these radar antennas are rotating or if pointed away from you, there is even less chance of serious exposure. In case of doubt in any particular situation, you should arrange to have the radar de-energized, or consult a responsible person as to the potential hazard involved.

5.06 When climbing poles or towers, follow the safety precautions in Sections AG25.300, R40.484.00 and 081-725-200. Some of these precautions are:

(a) Make sure the structure is safe to climb.

(b) When climbing, avoid overexertion. After climbing about 25 feet, stop and rest before proceeding.

(c) Wear safety helmets when necessary.

(d) Wear the tower body belt and safety straps described in Section 081-725-200.

U.S. GOVERNMENT
SIGN POSTED
IN AREAS WHERE
HIGH POWER
RADARS OPERATE

COLOR SCHEME
Legend, narrow lines and slant lines - Bright Red
All background - Bright Yellow

Fig. 4

5.07 Be careful when climbing on roofs or other such structures. Snow, rain, or wind can make these surfaces hazardous.

6. SHOP OR MAINTENANCE CENTER SAFETY PRACTICES

6.01 Cover the top and front edge of test benches and the floor in front of them with an insulating material such as linoleum or rubber matting. Remember, this material does not guarantee protection against high voltages.

6.02 Wear eye protection, such as safety glasses, at all times.

6.03 If working on or near storage batteries, follow prescribed safety practices.

6.04 When working under cars or trucks, do not depend only on jacks to hold the car up. Block up the vehicle so it cannot fall if the jack fails. Follow all local garage safety practices.

6.05 Do not smoke when working under the hood, around the engine, or under a vehicle. Do not smoke if working in the engine compartment or bilge of a boat.

6.06 When using portable electric drills, hammers, saws, etc, which contact the body, follow the precautions in Section 620-103-010 or 010-111-010.

7. AUDIO AND VIDEO AMPLIFIERS

7.01 Leave the covers in place on video amplifier units unless a part of the unit under the cover is to be repaired.

7.02 Hazardous voltages do not normally appear on the apparatus side of equipment. On the wiring side, these voltages are usually covered by shields or covers. To be sure where these voltages are, refer to the Bell System Practice for instructions for the equipment.

7.03 When leaving equipment operating unattended, be sure that the safety cover, door, or panel is in place.

8. TESTING EQUIPMENT

8.01 Most radio and video test equipment, viewing monitors, etc, use high voltages. These units do not require frequent repair. If repair is necessary, be sure to ***first*** read the practice or instruction covering the unit. ***Then*** you will know which voltages are hazardous and where they are located.

8.02 If necessary to handle oscilloscope or kinescope tubes, read Section 010-110-002. Cold cathode tubes are covered in Section 024-700-801.

9. ANTENNAS

9.01 Before touching or disconnecting a fixed station antenna, or disconnecting the antenna of a ship from its transmitter or receiver, ground the antenna. This will prevent shock from any accumulated charge.

9.02 Do not work on antenna transmission lines or coupling loops during a thunder or lightning storm.

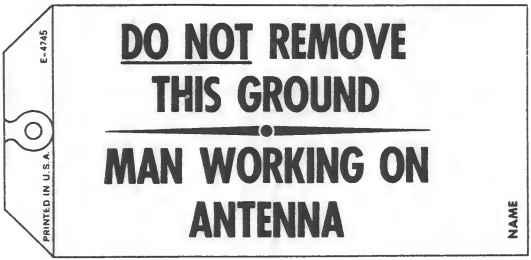
9.03 If working on an antenna or transmission line without disconnecting it, ground the antenna at the transmitter or receiver. On fixed stations, place tag E-4745 reading "DO NOT REMOVE THIS GROUND—MAN WORKING ON ANTENNA". (See Fig. 5.) Then put your name on the tag. Only the man who placed the tag should remove the ground and the tag.

9.04 Any disconnected antenna system may accumulate a static charge. Therefore, temporarily ground it during the disconnection time.

9.05 Be careful when working near transmission lines which may be energized. Contact with them can result in an electrical shock.

10. ANTENNA SUPPORTING STRUCTURES

10.01 Many types of antenna supporting structures are used. These vary from short wood poles to extremely tall steel masts or towers. These are located both on high buildings and on large ships.



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BLACK LETTERING

Fig. 5

10.02 If maintaining antennas or their supporting structures, make sure you are aware of the hazards involved. Follow precautions in 5.06.

10.03 It is recommended that a local practice be obtained describing the antenna supports in your area. The practice gives safety precautions to observe when working on supports. A list of items to consider is:

(a) *Electrical Hazards*

(1) Be sure any electrical wiring on or adjacent to the structure is in good condition and not likely to energize the structure.

(2) Determine if you will be exposed to direct contact with an antenna.

(b) *Climbing and Working on Antenna Supports*

(1) Review Sections R40.484.00, AG25.300, and 081-725.200.

(2) Determine if the structure is safe to climb.

(3) After climbing about 25 feet, stop and rest before proceeding.

(4) Take only those tools that are actually needed. Carry them in a canvas bucket or other good container. Be careful not to drop them.

11. MARITIME MOBILE TELEPHONE INSTALLATION AND MAINTENANCE

11.01 Mobile telephone installations on ships, small boats, barges, etc, present hazards with which you are probably not accustomed.

11.02 When boarding the craft, take care not to slip on the gangplank. Keep one hand free at all times to grab some handhold in case you should slip. Use a handrail or line, where provided. When walking, be extra cautious if the deck is wet and slippery.

11.03 When walking along the edges of craft that have no protective railings, try to avoid the side next to a dock or other craft. This minimizes the possibility of being crushed in case you slip and fall.

11.04 Never use both hands to carry equipment and never tie any equipment onto yourself. This enables you to drop the equipment in case you fall into the water.

11.05 When boarding hazards warrant, wear a Coast Guard approved life preserver.

11.06 Upon boarding a craft, notify the captain or person in charge. Tell him what you plan to do; then tell him when you are finished. He is then aware of your presence and safety.

11.07 Move from one vessel to another only when they are stopped. Do not board a moving vessel.

11.08 Since boats or ships usually have ropes, towing bits, hatches, etc, on the deck, watch where you walk to avoid falling.

11.09 The antennas on ships may be mounted high on the mast or other superstructure. Use the tower body belt and safety strap or boatswain's chair when working on these installations.

11.10 The engine rooms of boats or ships have various hazards; therefore, be especially careful. Look for wet or greasy decks, steam pipes, or moving machinery. Avoid being thrown off balance by the rolling motion of the ship.

11.11 Many ships carry radar. Since space is limited on shipboard, it is impossible to stay far enough away from the radar antenna to be safe. Therefore be sure it is off before working near it. Also, remember that if you are too near the radar antenna when it is rotating, you can be knocked overboard.

12. L-TYPE CARRIER

12.01 The ac line voltage on the inner conductor of L1 and L3 carrier coaxials is dangerous to personnel. Review the Bell System Practices covering the L-type carrier before working on the cable conductors or power supply equipment.

13. MISCELLANEOUS

13.01 There are contacts which may arc in radio and other equipment. Therefore, do not carry flammable or explosive mixtures in the same compartment with such equipment. If in an emergency such mixtures must be carried, use an approved container.

13.02 Caution customers about carrying flammable or explosive mixtures in the same compartment as the radio equipment. Attach Form E-4746 to mobile sets installed in trunks or airtight compartments. (See Fig. 6.) If the customer must carry these mixtures, recommend that an approved container be used.

13.03 It is not known if there is any appreciable hazard in using mobile transmitters near electrically operated blasting caps. However, follow the precautions described by the manufacturers of explosives. When mobile radio is installed in a vehicle used for highway construction, mining, drilling, etc, where blasting caps will normally be carried, caution the customer of the possible danger if manufacturers' recommendations are not followed.

13.04 Vehicles transporting bulk flammable explosive mixtures present hazards not normally encountered with the average mobile installation. These dangers can be reduced by observing the following precautions:

(a) Do not work where excessive gasoline or other explosive fumes are present.

(b) Install and maintain radio equipment in a well-ventilated location, preferably in the open.

(c) Install the radio equipment as far as possible from the loading and dispensing valves. Provide adequate air circulation around the radio equipment. Do not mount it under the vehicle where fumes may accumulate.

(d) Since most oil companies require the drivers to turn off the ignition when loading or unloading, it is recommended that the radio be wired through the ignition switch.

14. WARNING SIGNS

14.01 Following is a list of the principal warning signs for which piece-part numbers have been assigned:

READING	PIECE-PART NO.	MATERIAL	BACKGROUND	SIZE (inches)
WARNING HAZARDOUS VOLTAGES UNDERNEATH	P-369197	ALUM.	BLACK	1-1/4 x 2-1/8
	P-414908	METAL	RED	1-3/16 x 2-1/16
	P-188807	DECAL	RED	1-5/16 x 2-3/16
WARNING HAZARDOUS VOLTAGES	P-188597	DECAL	RED	1-1/4 x 2-1/8
WARNING HAZARDOUS VOLTAGES UNDERNEATH REMOVAL OF COVER MAY INTERRUPT SERVICE	P-188613	DECAL	RED	1-3/8 x 2-5/8

E-4746

CAUTION

EXPLOSION IN VEHICLE LUGGAGE COMPARTMENT CAN BE CAUSED BY EXPLOSIVE VAPORS NEAR RADIO EQUIPMENT. DO NOT CARRY GASOLINE OR OTHER FLAMMABLE LIQUIDS IN THIS LUGGAGE COMPARTMENT.

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WHITE BACKGROUND
RED LETTERING
ADHESIVE BACK

Fig. 6